BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN

Application of Milwaukee Water Works, Milwaukee County, Wisconsin, for Authority to Increase Water Rates   **3720-WR-107**

SUPPLEMENTAL DIRECT TESTIMONY OF ANDREW BEHM

June 21, 2010

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1 **Q.   State your name.**

2 A.   My name is Andrew Behm.

3 **Q.   Have you previously submitted direct and rebuttal testimony in this proceeding?**

4 A.   Yes.

5 **Q.   What is the purpose of your supplemental direct testimony?**

6 A.   This testimony has two purposes. My first purpose is to present Exh. 12.7, my revised cost

7   of service study. It replaces my original cost of service study presented in Exh. 12.2. I

8   revised the cost of service study to incorporate revisions to the revenue requirement filed

9   by Milwaukee Water Works (MWW) and the cost of service study changes proposed in

10   testimony by the parties. The first part of my supplemental direct testimony gives my

11   rationale for accepting some of the parties' suggested changes and declining others. My

12   second purpose is to address issues raised in rebuttal testimony relating to the proposed

13   economic development water rate.

14

1		**COST OF SERVICE STUDY**
2	**Q:**	**For each change discussed below, you estimate the cost of service effect on different**
3		**customer classes. Why do the net effects not always equal zero?**
4	A:	Because MWW has requested different rates of return for wholesale and retail customers,
5		changes that shift utility financed plant between wholesale and retail customers will
6		change the overall level of the revenue requirement. Changes that move utility financed
7		plant to wholesale customers will increase the overall revenue requirement. Changes that
8		move utility financed plant to retail customers or public fire protection will decrease the
9		overall revenue requirement.
10	**Q.**	**On pages R2.18 and 19 Patrick Planton argues that you changed the allocation of**
11		**public fire protection expenses from the 2007 MWW cost of service study. Is this**
12		**correct?**
13	A.	Yes. Mr. Planton is correct in stating that I originally allocated extra-capacity max hour
14		storage and distribution public fire protection expenses to wholesale customers. These
15		costs were not allocated to wholesale customers in the 2007 cost of service study. In Exh.
16		12.7, I have now removed the allocation of the max hour distribution cost function to all
17		wholesale communities and West Milwaukee. I have also removed the allocation of the
18		max hour storage cost function to all wholesale communities except Mequon and
19		Shorewood, which lack their own elevated storage. This change lowers wholesale public
20		fire protection cost of service by approximately $482,000. This decrease is balanced by
21		increases of about $439,000 for Milwaukee and $43,000 for suburban retail communities'
22		public fire protection cost of service.

1   There is also a significant and relevant difference concerning storage cost

2   allocation between the 2007 MWW cost of service study and my original cost of service

3   study in Exh. 12.2. The 2007 cost of service study allocated the max hour storage cost

4   function for general service to wholesale customers. My original cost of service study

5   eliminated this allocation for the reasons laid out on page D12.15 and 16 of my testimony.

6   This change, which I have preserved in Exh. 12.7, lowers cost of service for the wholesale

7   customers by approximately $81,000. This decrease is balanced by increases of about

8        $65,000 for retail cost of service and $11,000 for the public fire protection class.

9   **Q: Did you make any other changes to the allocation of public fire protection costs?**

10 A: Yes, I lowered my estimate of maximum water demand for public fire protection for

11   Milwaukee for the purpose of allocating public fire protection costs between the

12   communities to 12,960,000 gallons.

13   As explained on page D12.19 of my direct testimony, I revised the estimates of

14   total fire protection demand for each community according to a combination of formulas

15   based on population served. This change has two principal effects. First, it balanced public

16   fire protection cost responsibility away from wholesale and suburban retail communities

17   toward the city of Milwaukee. Second, it balanced inequities among wholesale and

18   suburban retail communities. Reducing Milwaukee's water demand for fire protection

19   back to 12,960,000 gallons diminishes but does not eliminate the first effect and retains all

20   the benefits of the second effect.

21   The city of Milwaukee maximum demand of 10,800,000 gallons used in the 2007

22   cost of service study underestimates Milwaukee's demand for fire protection compared to

23   the results of the formulas based on population and compared to other large utilities. These

1		other methods would calculate a fire demand of 19,440,000 gallons for Milwaukee.
2		However, increasing Milwaukee's total fire protection demand to 19,440,000 gallons
3		while simultaneously reducing wholesale and suburban retail demands would have a very
4		disproportionate effect on cost of service. I recommend the value of 12,960,000 gallons for
5		Milwaukee's estimated maximum fire protection demand for the purpose of allocating
6		public fire protection cost responsibility more reasonably. I also propose to review this
7		value in Milwaukee's next rate case and consider further movement toward the calculated
8		value of 19,440,000 gallons.
9		Decreasing Milwaukee's maximum water demand for public fire protection from
10		19,440,000 to 12,960,000 reduces the public fire protection cost of service for Milwaukee
11		by about $406,000. This reduction is balanced by increases of about $229,000 for
12		suburban retail and about $176,000 for wholesale public fire protection cost of service.
13	**Q:**	**Eric Rothstein, on page R2.44, and Patrick Planton, on pages R2.4 to 7, argue that**
14		**you should resolve Account 343, Transmission and Distribution Mains, into**
15		**transmission and distribution components on the basis of actual plant balances. Did**
16		**you make this change?**
17	A:	Yes. I revised the division of Account 343 between transmission and distribution
18		components based on the actual original cost plant balances provided by MWW and
19		shown in Exh. 2.3. This is an improvement over the 2007 MWW cost of service study,
20		which divided mains on the basis of length times diameter. This change reduces the cost of
21		service for wholesale customers by approximately $516,000. This decrease is balanced by
22		increases of about $420,000 in retail and $31,000 in public fire protection cost of service.

1   It is important to view this change in the context of another change I made to the

2   division of mains between transmission and distribution in Exh. 12.2. In the 2007 cost of

3   service study, expenses in Accounts 662, Transmission and Distribution Line Expenses,

4   and Account 673, Maintenance of Transmission and Distribution Mains, were divided

5   between transmission and distribution on the basis of length times diameter. My original

6   cost of service study resolved these accounts into transmission and distribution

7   components on the basis of length. This change is based on the assumption that mains cost

8   roughly the same to maintain per foot regardless of size. This change, which I have

9   preserved in Exh. 12.7, results in a cost of service benefit to wholesale customers of about

10       $702,000. This reduction is balanced by increases of about $654,000 for retail cost of

11   service and $48,000 for the public fire protection class.

12   **Q: Michael Gorman, on pages R13.7 to 9, and Patrick Planton, on pages R2.8 to 10,**

13   **argue that you should adjust the utility financed plant balances for transmission and**

14   **distribution main based on information supplied by MWW and shown in Exh. 2.5**

15   **relating to contributions. Did you make this change?**

16   A: In part. I agree that an adjustment should be made, but I disagree as to the amount of the

17   adjustment.

18   In my original cost of service study, I assumed that the utility funds all

19   transmission mains and customer contributions only fund distribution mains. Exh. 2.5

20   shows that, at least since 2003, this assumption is inaccurate. Since 2003, $3,928,480, or

21   29.282 percent of contributions for mains, has been contributed toward construction of

22   transmission mains. Mr. Gorman and Mr. Planton recommend allocating 29.282 percent of

23   all contributions for mains to the transmission component based on this information. Mr.

1   Gorman and Mr. Planton's proposed treatment would reduce wholesale cost of service by

2   about $227,000. Such a decrease would be offset by increases of about $176,000 in retail

3   cost of service and $13,000 in the public fire protection class.

4   However, MWW could not provide information on contributions prior to 2003.

5   The assumption that the experience of seven years can be extrapolated over the life of

6   existing mains is tenuous. It is indisputable that $3,928,480 worth of transmission mains

7   has been funded through contributions, and accordingly I have moved this amount of

8   utility financed mains from transmission to distribution. To make a more general statement

9   about contributions funding transmission mains, though, would be speculation.

10   My adjustment of $3,928,480 of utility financed mains from the transmission to

11   distribution component reduces wholesale cost of service by approximately $50,000. This

12   decrease is balanced by an increase of about $39,000 in retail cost of service and a small

13   increase in the public fire protection class.

14 **Q:**   **On pages R2.40 and 41 of his testimony, Mr. Rothstein offers a method of**

15   **implementing Mr. Gorman's suggested allocation of transmission mains to the max**

16   **hour system cost function. Did you make this change?**

17 A: No. Mr. Rothstein recommends allocating transmission mains 58.82 percent to base, 23.35

18   percent to max day system, and 17.65 percent to max hour system. Conceptually this

19   treatment is reasonable. However, this does not mean that allocating transmission mains on

20   the controlling design parameter of max day demand, as I do in the original and revised

21   cost of service studies, is unreasonable. Furthermore, as noted on page R12.4 and 5 of my

22   rebuttal testimony, shifting expenses between max day system and max hour system cost

1   functions does not have a large effect on the cost of service study because these cost

2   functions are allocated to customer classes in similar proportions.

3   This change would reduce cost of service for nonresidential urban retail by about

4     $58,000 and wholesale by about $69,000. These reductions would be balanced by

5   increases of about $47,000 in urban retail residential and about $72,000 in public fire

6   protection cost of service.

7 **Q: Mr. Gorman and Mr. Planton offer alternative methods for estimating the maximum**

8   **day to average day and maximum hour to average hour ratios. What estimates of**

9   **these values does Mr. Gorman propose on pages R13.3 to 7?**

10 A: Mr. Gorman questions whether recent changes in the max day to average day ratio are due

11   to cool, wet summers, and he cites the summers of 2008 and 2009 as examples. Mr.

12   Gorman is correct that rainfall has a significant impact on year to year fluctuations in the

13   max day to average day ratio. He is also right that an estimate of the max day to average

14   day ratio based on too few years is prone to influence by variations in weather. However,

15   the pronounced and persistent trend of decreasing peak demands experienced by MWW

16   suggests a more permanent and fundamental driver, beyond annual variation in the

17   weather. This trend is more probably driven by changes in the MWW customer base and

18   changing water use practices.

19   As alternatives to my estimated max day to average day ratio of 1.4 and max hour

20   to average hour ratio of 1.7, Mr. Gorman offers the 6-year average of 1.43 and 1.73 and

21   the 10-year average of 1.46 and 1.79. The values he proposes are a significant step toward

22   reality compared to those used in the 2007 MWW rate case. However, he discounts

23   persuasive evidence (PSC REF#: 129690) of a declining trend that has held true broadly

1		for at least two decades. For this reason, I have not used Mr. Gorman's ratios in my
2		revised cost of service study.
3		Mr. Gorman's 6-year average ratios of 1.43 and 1.73 would reduce nonresidential
4		urban retail cost of service by about $83,000 and wholesale by $68,000. These decreases
5		would be offset by increases of about $30,000 in residential urban retail and $121,000 in
6		public fire protection cost of service.
7		Compared to my recommended ratios, Mr. Gorman's 10-year average ratios of
8		1.46 and 1.79 would reduce nonresidential urban retail cost of service by about $197,000
9		and wholesale by $137,000. These decreases would be balanced by increases of about
10		$66,000 in residential urban retail cost of service and $268,000 in the public fire protection
11		class.
12	**Q:**	**What method does Mr. Planton suggest on pages R2.10 to 14 for estimating the max**
13		**day to average day ratio?**
14	A:	Mr. Planton analyzes max day and average day data from 1997 to 2009. He calculates a
15		sample mean of 1.48, and he estimates that based on this data the max day to average day
16		ratio has a 9 in 10 chance of falling below 1.61 in 2010. He then proposes using this value
17		of 1.61 as the max day to average day ratio in the cost of service study.
18		I disagree with Mr. Planton's two central assumptions. First, he assumes that the
19		data follow a normal distribution for the 13-year period of his analysis. The normal
20		distribution of data points is a necessary requirement for a meaningful analysis of standard
21		deviation and confidence intervals. Theoretically, the max day to average day ratio is
22		normally distributed around a mean determined by the customer base size, composition,
23		and water use habits with variation from the mean caused by changes in weather and

1   economic conditions, among other things. However, when the customer base is changing

2   and customers' usage habits are changing, data points over several years are not distributed

3   normally around a single population mean. Rather data points are distributed around a

4   continuously changing mean. Said another way, Mr. Planton reaches his conclusion by

5   ignoring the pronounced trend in the data.

6   Secondly, I disagree with Mr. Planton's criteria for accepting his estimate. He

7   estimates that the actual max day to average day ratio in 2010 has a 9 in 10 chance of

8   falling below his proposed value of 1.61 and a 1 in 10 chance of falling above it. It is

9   important to remember that when the actual value falls below the estimated value (when

10   the actual peak is less than the estimated peak) costs are overallocated to extra capacity

11   cost functions, and nonresidential and wholesale customers benefit at the expense of other

12   residential and public fire protection classes. Conversely, when the actual value falls above

13   the estimated value (when the actual peak is higher than the estimated peak) costs are

14   underallocated to extra capacity cost functions, and residential and public fire protection

15   classes benefit. If Mr. Planton's proposed value of 1.61 has a 90 percent chance of

16   overestimating the max day to average day ratio, there is a 90 percent chance that

17   nonresidential and wholesale customers will unreasonably benefit at the expense of

18   residential and public fire protection customers. For these reasons I have not used Mr.

19   Planton's ratio in my revised cost of service study.

20   Mr. Planton does not propose a value for the max hour to average hour ratio. To

21   estimate the effect of this change I assume a ratio of 1.90. The ratios of 1.61 and 1.90, if

22   used, would reduce nonresidential urban retail cost of service by about $513,000 and

1		wholesale by $425,000. These decreases would be offset by increases of about $187,000 in
2		residential urban retail cost of service and $747,000 in the public fire protection class.
3	**Q:**	**On pages R13.11 and 12, Mr. Gorman criticizes your changes in the customer class**
4		**demand ratios relative to the 2007 MWW cost of service study. Are these criticisms**
5		**justified?**
6	A:	Mr. Gorman correctly states that my changes to the customer class demand ratios are
7		based on my judgment and a review of other utilities. He is also correct that the demand
8		ratios used in this case are significantly different from those used in 2007. Lastly, he
9		correctly states that residential demand ratios are prone to fluctuate with variations in
10		rainfall. However, these three facts do not show that the values I used are unreasonable
11		given the data available. Absent a demonstration that MWW's demand ratios are
12		significantly different from other water utilities, it is more reasonable to base MWW's
13		customer class demand ratios on the experience of other utilities than on the outdated
14		ratios used in the 2007 cost of service study.
15		It is my understanding that MWW will be gathering customer demand information
16		before its next rate case. This may provide useful information specific to MWW on which
17		to base estimates of customer class demand ratios in the future.
18	**Q:**	**On pages R13.10 to 11, Mr. Gorman proposes an allocation of electricity costs to**
19		**extra capacity cost functions. Did you make this change?**
20	A:	No. In Exh. 12.2 I allocated Account 623, Power Purchased for Production, exclusively to
21		the base cost function. This allocation is retained in Exh. 12.7 and is a reasonable
22		approximation given the data limitations I discussed on page R12.7 of my rebuttal
23		testimony.

1   Mr. Gorman proposes to allocate 68.4 percent of this account to base and 31.6

2   percent to an extra capacity factor based on an assumed load factor. After reviewing

3   electricity cost information submitted by the utility (PSC REF#: 133172, 133173, 133174,

4   133175, 133176, 133177, 133178), I determined electricity costs for the Texas, North

5   Point, and Riverside pumping stations are approximately 30 percent demand charges.

6   However, Grange, Florist, and Lincoln booster pumping stations are not billed charges for

7   electricity based on demand. Additionally, demand charges make up less than 10 percent

8   of the electric bills for the Howard and Linwood treatment plants, and it is not clear that

9   these demand charges are related to extra capacity water demand. Over the last two years

10   pumping station demand charges accounted for 17.70 percent of electricity costs.

11   Therefore, allocating 17.70 percent of electricity costs to max day or max hour extra

12   capacity may better reflect the effect of extra demand on MWW's electricity costs.

13   However, it has not been established that these demand charges are caused by

14   maximum day demand. Firmly establishing this cost causation would require information

15   that MWW is not able to provide at this point, specifically monthly max day water

16   production and electricity use as noted on page R12.7 of my rebuttal testimony. For this

17   reason, I have not changed the allocation of electricity costs from the original cost of

18   service study.

19   For estimating the effect of this change, I assume Mr. Gorman is proposing an

20   allocation to the max day cost function, not max hour. I expect an allocation to max hour

21   would slightly favor nonresidential retail and wholesale. Mr. Gorman's proposed 31.6

22   percent allocation would reduce nonresidential urban retail cost of service by about

23   $129,000 and wholesale by $165,000. These decreases would be balanced by increases of

1   about $64,000 in residential urban retail cost of service and $237,000 in the public fire

2   protection class.

3   My suggested alternative 17.7 percent allocation, again assumed to be to max day,

4   would reduce nonresidential urban retail cost of service by about $72,000 and wholesale

5   by $93,000. These decreases would be balanced by increases of approximately $36,000 for

6   residential urban retail cost of service and $133,000 for the public fire protection class.

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2 Q. **Mr. Rothstein and Mr. Wojcehowicz (PSC REF# 131595) argue that the EDR should**

3 **also apply to wholesale water rates. How could an EDR for wholesale customers be**

4 **implemented?**

5 A. I agree with Mr. Rothstein and Mr. Wojcehowicz that wholesale customers of MWW

6 should have access to the EDR. To the extent that the goal of the EDR is to use MWW's

7 excess capacity, the goal is equally well achieved through increased wholesale sales as

8 through increased retail sales. The EDR proposed in Exh. 12.3, though, is limited to

9 MWW's retail customers. If the Commission agrees that increased wholesale sales should

10 also qualify for an incentive water rate, the most appropriate method of implementing the

11 rate would be to adopt a separate wholesale EDR.

12 As I discuss below, Ms. Lewis of MWW proposes modifying the EDR to require a

13 customer to create 25 new jobs in the city of Milwaukee in order to qualify for the reduced

14 rate. If the Commission agrees with Ms. Lewis, a separate wholesale EDR would not be

15 appropriate because additional wholesale water consumption would not directly create new

16 jobs in Milwaukee.

17 Q: **In her rebuttal testimony, Carrie Lewis suggests several changes to the proposed**

18 **EDR. These changes are summarized in her revised proposed tariff shown in Exh.**

19 **1.17. Do you support her change to the "but for" clause requirement?**

20 A: Ms. Lewis proposes the requirement of an affirmation from the customer that it "would not

21 be increasing its water consumption…, but for" the EDR be changed to require the

22 customer to affirm that the EDR "was a factor in the customer's decision…" Ms. Lewis

1   notes that the EDR will only be one of many factors weighing into a customer's decision

2   to increase water consumption.

3   I disagree with this proposed change. This change weakens an important protection

4   for other ratepayers. Only if the EDR is the decisive factor in the customer's decision to

5   increase its water consumption do ratepayers benefit from the subsidy. If a customer would

6   have increased its water consumption regardless of the EDR, ratepayers are funding a

7   subsidy to the economic development customer and receiving nothing in return.

8   However, I do agree with Ms. Lewis that water rates are only one factor among

9   many influencing a business's decision to move to or expand within MWW's service

10   territory. This view is echoed by Ed Glatfelter of the Alliance for the Great Lakes in his

11   online comment (PSC REF#: 132177). Mr. Glatfelter points out that the the Area

12   Development 2009 Annual Corporate Survey does not mention water rates on its list of

13   important factors for companies considering relocation. The EDR will at best only be a

14   subordinate consideration for customers considering expansion or relocation. This fact

15   increases rather than diminishes the importance of the "but for" clause in excluding free

16   riders from receiving subsidies at ratepayer expense.

17 **Q:**   **Do you agree with her proposal to reduce the volume increment required to qualify**

18   **for the EDR?**

19 A: Ms. Lewis makes two proposals that together effectively lower the volume threshold for

20   the EDR. First, she proposes to use the customer's twelve-month average as the baseline

21   instead of the highest monthly consumption in the preceding two years. Second, she

22   proposes to disqualify a customer from the EDR after it fails to use the required volume

23   for four consecutive months instead of the two consecutive months proposed in Exh. 12.3.

1   I disagree with Ms. Lewis's characterization of the baseline calculation I proposed

2   as "very stringent." Given recent economic history, it is likely that many industrial

3   customers in the MWW service area have been operating below capacity over the last

4   twelve months. Comparison with a twelve-month average may show apparent increases in

5   consumption for customers that are only returning to historically normal levels of

6   consumption. My originally proposed baseline calculation avoids this possibility.

7   I do not object to Ms. Lewis's proposed change in the number of months a

8   customer can fall short of the required consumption without becoming ineligible for the

9   EDR. She rightly states that her proposed change would be more accommodating to

10   customers with seasonally fluctuating demands. The appropriate number of months to

11   allow a customer to miss its volume requirement depends on the type of customer the EDR

12   is intended to target.

13 **Q: Do you support her proposed addition of the requirement that a customer create 25**

14 **jobs in order to qualify for the EDR?**

15 A: I oppose this provision both for the reasons laid out in my direct testimony on page D12.22

16   and 23 and for the additional reasons I articulate below.

17   In her rebuttal testimony, Ms. Lewis disputes my statement that the job creation

18   requirement would "place onerous verification and reporting requirements on MWW." She

19   counters that these functions are routinely performed by the City of Milwaukee

20   Department of City Development (DCD). Because the EDR is available within the entire

21   retail service area of MWW, the DCD will potentially be required to verify job creation in

22   West Milwaukee, Greenfield, St. Francis, and Hales Corners. If the DCD is willing to

23   undertake this responsibility, this concern may possibly be eliminated.

1   The concern over job verification within suburban retail communities may also be

2   avoided if the EDR is limited in scope to only the city of Milwaukee. This appears to be

3   Ms. Lewis's intent when she proposes a requirement that jobs are created "in the City" in

4   Exh. 1.18. However, limiting the availability of the EDR to Milwaukee contradicts

5   MWW's goal, stated in Exh. 1.11, of "absorbing some of the available excess capacity and

6   mitigating costs related to that excess capacity." Increased water sales to suburban retail

7   customers decreases excess capacity, and excluding suburban communities from the EDR

8   diminishes its ability to promote use of excess capacity.

9   Also of concern is the unclear framework for resolving a complaint relating to

10   employment levels. Because such a complaint would concern the rates charged by MWW,

11   it would presumably fall within the jurisdiction of the Commission. However, the

12   Commission has no experience or expertise in measuring and verifying employment levels

13   and would be ill-prepared to resolve such a complaint.

14   Lastly, in its decision on the request for an EDR by Wisconsin Power and Light in

15   docket 6680-GF-126, the Commission did not include a requirement for job creation. For

16   these reasons, I recommend keeping issues of job creation separate from water rates.

17   **Q: Do you propose any changes to the language of the EDR in Exh 12.3?**

18   A: Yes. I propose to change every instance of the word "consumption" to "usage" to clarify

19   that water sales under this tariff have no relation to "consumptive use" as defined by the

20   Great Lakes Compact.

21   **Q: Does this conclude your supplemental direct testimony?**

22   A: Yes.